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ABSTRACT

THE PREMISE, THAT CIGARETTE SMOKING IS HAZARDOUS TO HEALTH, IS THE BASIS OF THIS STUDY. THE PURPOSE OF THE STUDY WAS TO CAUSE A SHIFT IN BEHAVIOR FROM THE "PRESMOKER" OR "SMOKING EXPERIMENTER" TOWARD THE "NONSMOKER" RATHER THAN THE SMOKER. THE GENERAL CONCEPT, THE CIGARETTE SMOKING HABIT IS A HEALTH HAZARD OF SUFFICIENT IMPORTANCE FOR YOUTH TO RESIST THE PRESSURE TO SMOKE, WAS USED TO DEVELOP A UNIT IN SMOKING FOR SEVENTH GRADERS. A PILOT STUDY WAS CONDUCTED USING A FIVE LESSON UNIT ON SMOKING EDUCATION. THREE DIFFERENT APPROACHES WERE USED: (1) THE INDIVIDUAL APPROACH, (2) THE PEER-LED APPROACH, AND (3) THE TEACHER LED APPROACH. TEACHER PREPARATION WAS ALSO TESTED, A REGULAR CLASSROOM TEACHER AS OPPOSED TO ONE HAVING BEEN TRAINED IN SMOKING EDUCATION. A TOTAL OF 575 SEVENTH GRADE STUDENTS PARTICIPATED. RESULTS INDICATE (1) THE TEACHER LED APPROACH APPEARED TO BE MOST EFFECTIVE IN SITUATIONS WHERE GOOD DISCUSSION WAS POSSIBLE, PEER-LED WAS MORE EFFECTIVE IN SMALLER SIZE CLASSES; (2) REGULAR CLASSROOM TEACHERS WERE MORE EFFECTIVE; (3) GIRLS MADE A MORE SIGNIFICANT CHANGE TOWARD NON-SMOKING THAN BOYS; AND (4) IN GENERAL, THE FIVE LESSON EXPERIMENTAL EDUCATION UNITY CHANGED ATTITUDES AND BELIEFS ABOUT SMOKING. (SK)

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THE EFFECT OF THE TEACHER AND THREE DIFFERENT CLASSROOM APPROACHES ON SEVENTH GRADE STUDENTS' KNOWLEDGE, ATTITUDES AND BELIEFS ABOUT SMOKING*

Robert P. Irwin, Ph.D.

The relationship of cigarette smoking to certain chronic diseases has been well documented in Public Health Service reports.[10] This premise, that cigarette smoking is hazardous to health, was accepted and is a basis of this study. As of now, efforts to develop effective means of treatment or prevention of the chronic disease conditions associated with cigarette smoking through such methods as prohibition or environmental change have been relatively unsucessful. The difficulty arises from the fact that the prime underlying causes for initiating and continuing cigarette smoking are related to human behavior rather than to some infections or nutritional entity. As a result a change in human behavior becomes a necessary intermediate objective if the prevention and control of diseases associated with cigarette smoking are to be achieved. The shift in behavior sought in this study was from the "pre-smoker" or "smoking experimenter" behavior toward the "non-smoker" behavior rather than toward the "smoker" behavior.

The Development of the Experimental Teaching-Learning Guides:

To facilitate the introduction of a formal program for educating youth concerning the importance of non-smoking behavior, realistic answers had to be offered to the questions of when, what, and how such instruction should take place.

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The earlier findings of the University of Illinois Anti-Smoking Education Study,[2] suggested that the seventh grade level was the most effective time when an intensive educational program could truly be preventive. Results of the Illinois survey indicated that the eighth grade level represented a critical point in the cigarette smoking experience for all students. It would appear that this is the period wherein the student decides either to reject cigarette smoking or to move to habitual smoking.

The decision as to what should be included in the experimental teaching unit was based on the use of the concept approach as employed in many curriculum studies and particularly as formulated in the School Health Education Study[9] and in the report Health Concepts: Guides for Health Instruction.[1] The elements of this unit were developed from the general conceptual statement, "The Cigarette Smoking Habit is a Health Hazard of Sufficient Importance for Youth to Resist the Pressure to Smoke." Based upon this idea, five related sub-concepts were formulated from which the specific objectives, the content, and the learning activities were developed. These five central ideas or sub-concepts were arranged into a five lesson sequence for the teaching experiment.

How these lessons were to be taught was guided by findings from a series of related studies,[3] and by applying the principles identified in the health behavior studies of Hochbaum,[5] Rosenstock[8] and others. The sequence of lessons was arranged according to the steps outlined in Horn and Waingrow's[6] behavior change model. These steps are as follows:

(a) An awareness of the threat

(b) The acceptance of the importance of the threat

(c) The relevance of the threat

(d) The susceptibility of the threat to intervention.

The objectives in each of the five lessons were written in a manner that communicated clearly the expected student behavior and the content to be learned.

Experimental Procedures:

A premise of this study held that a classroom experience carefully designed in terms of organization of subject matter, selection of teaching materials, and teaching techniques would provide the basis for an effective teaching-learning situation. Moreover, it was held that such an approach would result in the desired educational changes with respect to cigarette smoking. In order to evaluate such a program, a pilot study was conducted using the five lesson unit on smoking education. This experiment was designed to test the effects of three different educational approaches and the effects of teacher training on the smoking education of seventh grade students.

Each of the approaches employed the same curricular materials and sequence of the lessons. This was done in order to hold constant the influence of the materials in each of the experimental groups while varying the educational approaches. The three approaches were developed to produce increasingly greater effects upon the student.

The educational effect of the Individual approach depended upon the student's own study and interpretation of the curricular materials. Any contact with the teacher had to be student initiated. These students assigned to the Peer-Led approach studied the same materials but presumably were also affected by the class discussions with their peers. Finally, the Teacher-Led approach had the combined effect of the materials, individual study, peer group discussion, and the teacher's skill in an attempt to achieve the maximum educational effects.

The other major aspect of the study, teacher preparation, was evaluated by comparing the effectiveness of the regular classroom teacher with that of incoming teacher (a member of the study team) who had been trained in smoking education.

FIGURE I FACTORIAL DESIGN FOR THE CLASSROOM EXPERIMENT IN SMOKING EDUCATION

	B. APPROACH EFFECT					
	B_1 Teacher-Led Maximize the interaction of students and teachers		B_2 Peer-Led Maximize the interaction of students		B_3 Individual Study	
A. TEACHER EFFECT						
A_1 Teacher Trained in Smoking Education	A_1B_1 TT Teacher-Led		A_1B_2 TT Peer-Led		A_1B_3 TT Individual	
	1	2	3	4	5	6
A_2 Regular Teacher (not trained in Smoking Education)	A_2B_1 RT Teacher-Led		A_2B_2 RT Peer-Led		A_2B_3 RT Individual	
	7	8	9	10	11	12
C. SEX EFFECT	Boy	Girl	Boy	Girl	Boy	Girl

Curriculum materials and lesson sequence were the same for all approaches

TT = Trained Teacher

RT = Regular Teacher

The experiment, including the pre and posttesting with the attitude-belief scale[4] and smoking knowledge test,[7] was conducted over a six week period in October and November of 1968.

The subjects for this study included the 575 seventh grade students in four junior high schools who completed all of the test measures used in the experiment. They represented a mix of youngsters from both the urban and rural communities of Winnebago County which is located on the Wisconsin border of Illinois. The three approaches were carried out both by the Trained Teachers and the Classroom Teachers in the regularly scheduled physical education or science classes. This was done in an attempt to conduct the experiment in a natural school environment. Only one of the six possible treatments or approaches was used in each classroom. The number of students in each class ranged from a low of 19 to a high of 71.

The data collected from the pre and posttest measures of this 2 x 3 x 2 factorial experiment were analyzed using a multivariate analysis of covariance for unequal cells. Significant effects were further analyzed using the Newman-Keuls technique.[11]

Study Results:

In general the curriculum materials were favorably received by both teachers and students. The experiment was considered to be a positive experience even when problems were encountered. In comparing the three approaches there appeared to be a lack of agreement in that no single approach was favored by all of the teachers. The Teacher-Led approach appeared to be most effective in the situations where good discussion was possible. While the Peer-Led approach appeared to be most effective in the smaller size class. The effectiveness of the individual study depended to a large extent upon the particular class mode of working.

There was a marked change in the students attitude-belief scores which was reflected by the approximate 130 percent gain in the grand mean test score (see appendix Figure 4). However, the increases in student knowledge test scores were much less smaller with an approximate 15 percent increase (see appendix Figure 5).

The data from the attitude-belief scores using the analysis of covariance technique are summarized in Table 1. The .05 level of significance chosen for this study was exceeded in five of the seven effects examined in this analysis.

TABLE 1. - ANALYSIS OF COVARIANCE FOR ATTITUDE-BELIEF MEASURES

Source of Variance	Adjusted S.S.	df	Adjusted M.S.	F Value	P Less Than
A Teachers	4,177.38	1	4,177.38	13.08	.0004*
B Approaches	3,209.06	2	1,604.53	5.02	.0069*
C Sex	1,690.44	1	1,690.44	5.29	.0218*
AB Teacher x Approach	5,644.63	2	2,822.31	8.84	.0002*
AC Teacher x Sex	48.25	1	48.25	0.15	.6977
BC Approach x Sex	1,949.00	2	974.50	3.05	.0481*
ABC Teacher x Approach x Sex	43.56	2	21.78	0.69	.9341
E Within Cell	179,500.33	562	319.40		
		573			

*Significant beyond the .05 level

Results and Analysis of Attitude-Belief Changes:

FIGURE 2.

Analysis of the Significant Differences Between the Main Effects And the Interaction of these Effects on Seventh Grade Students Attitudes and Beliefs toward Smoking

1. Main Effects

1.1	Regular Teacher	>	Trained Teacher
1.2	Individual Study	>	Peer-Led
1.3	Girls	>	Boys

2. Interaction Effects

2.1	RT x Teacher-Led	>	TT x Teacher-Led, TT x Peer-Led
2.2	RT x Peer-Led	>	TT x Teacher-Led
2.3	RT x Individual Study	>	TT x Teacher-Led, TT x Peer-Led
2.4	TT x Individual Study	>	TT x Teacher-Led
2.5	Individual Study x Boys Individual Study x Girls Peer-Led x Girls Teacher-Led x Girls	>	Peer-Led x Boys
2.6	Girls x Individual Study	>	Boys x Teacher-Led

RT = Regular Classroom Teacher
TT = Trained Teachers (trained in Smoking Education)

1.1 Students taught by the Regular Classroom Teacher achieved a significantly higher attitude-belief score (more favorable non-smoking score) than did those students taught by the Trained Teachers.

1.2 Students in the Individual group approach achieved significantly higher attitude-belief scores than did students in the Peer-Led groups.

1.3 Girls made significantly higher attitude-belief scores than did the boys.

2.1 Students taught by Regular Teachers using the Teacher-Led approach achieved significantly higher scores than did students who were taught by Trained Teachers using either the Teacher-Led or Peer-Led approach.

2.2 Students in the Regular Teacher Peer-Led classes achieved higher scores than did those students in the Trained Teacher Teacher-Led classes.

2.3 Students taught by Regular Teachers with the Individual Study approach achieved higher scores than did the students taught by Trained Teachers using the Teacher-Led or Peer-Led approaches.

2.4 Students in Trained Teachers classes using the Individual Study approach achieved higher scores than did students in the Trained Teachers Teacher-Led classes.

2.5 All of the classes, by approach and by sex, achieved significantly higher scores than did the boys who were taught by the Peer-Led approach.

2.6 Girls in the Individual Study classes had significantly higher scores than did the boys in the Teacher-Led classes.

The same analysis of covariance statistical treatment was applied to the knowledge test measures as was used for the attitude belief scale measures. This analysis is summarized in Table 2.

TABLE 2. - ANALYSIS OF COVARIANCE FOR KNOWLEDGE MEASURES

Source of Variance	Adjusted S.S.	df	Adjusted M.S.	F value	P Less Than
A Teachers	32.94	1	32.94	2.02	.1557
B Approaches	301.97	2	150.98	9.26	.0002*
C Sex	6.35	1	6.35	0.39	.5329
AB Teacher x Approach	32.97	2	26.48	1.62	.1979
AC Teacher x Sex	49.33	1	49.33	3.03	.0825
BC Approach x Sex	81.92	2	40.96	2.51	.0820
ABC Teacher x Approach x Sex	218.21	2	109.11	6.69	.0014*
E Within Cell	9,161.78	562	16.30		
		573			

*Significant beyond the .05 level

Results and Analysis of Knowledge Changes:

FIGURE 3.

Analysis of the Significant Differences Between the Main Effects And the Interaction of these Effects on Seventh Grade Students Knowledge about Smoking

1. Main Effects

   1.1 Individual Study, Teacher-Led > Peer-Led

2. Interaction Effects

   2.1 All of the Experimental Conditions Teacher x Approach x Sex > RT x Peer-Led x Boys

   2.2 TT x Individual Study x Girls > TT x Peer-Led x Boys, RT x Peer-Led x Girls

   2.3 TT x Individual Study x Boys > TT x Peer-Led x Boys, TT x Teacher-Led x Girls, RT x Peer-Led x Girls, RT x Individual Study x Boys

1.1 Students taught by the Individual Study and Teacher-Led approaches had higher scores than did the students taught by the Peer-Led approach.

2.1 Analysis of the interaction effects of teachers by approach and by sex revealed that students in all of the experimental classes achieved higher scores than did the students taught by the Classroom Teacher using the Peer-Led approach with boys.

2.2 Girls in the Trained Teachers Individual Study classes achieved higher scores than did the boys taught by the Trained Teachers Peer-Led approach and the girls taught by the Regular Teachers Peer-Led approach.

2.3 Boys in the classes with Trained Teachers using the Individual Study method achieved higher scores than did those boys who were taught by Trained Teachers using the Peer-Led approach, than the girls taught by Trained Teachers using the Teacher-Led approach, than the girls taught by Regular Teachers using the Peer-Led approach, and also achieved higher scores than did the boys who were taught by Regular Teachers with the Individual Study.

Conclusions:

Based on the findings of this study the following conclusions are presented:

1. The five lesson experimental education unit changed attitudes and beliefs about smoking. It would appear that this experiment had a strong positive influence on the attitudes and beliefs of the students. This positive effect is noted in the shift toward a more favorable position from pretest to the posttest scores with an approximate increase of 130 percent on the attitude-belief scale.
2. With regard to the teacher effect, the special classroom climate and

rapport of the Regular Teacher appears to be of considerable importance in smoking education. This teachers advantage would appear to more than offset any benefit gained from the greater knowledge of an outside specialist teacher.

3. The need to avoid the school's traditional authoritarian and disciplinary role in relation to cigarette smoking appears to have been confirmed by the success of the Individual Study approach. This success may be due to the fact that the usual school authority as represented by the teacher was minimized in this approach. The elemination of student punishment for smoking would seem to provide the supportive environment recommended by Newman[3] and which is believed to be an essential condition for producing educational change.

4. The interaction of teacher, approach, and sex of the student in the teaching process produced different results for the attitude-belief change than for the knowledge gain. It appeared that the educational processes that changed attitudes and beliefs were different from those that produced favorable knowledge changes.

Comments:

This study has presented an example where a systematic educational program has had some success in the "natural" or "regular" classroom situation.

The success of the Individual Study approach indicates the need to examine carefully the credibility of any educational approach that aims at health behavior change. In this respect the students preceived expectations of themselves predicated by the actions of their parents, the school, the community, and their peers should be an important aspect of the evaluation process.

The fact that this study successfully used the "regular" classroom leads to the next step of using the experimental classroom situation. Here the intrinsic parts of the teaching process may be investigated to find the "transportable" effects which will give the desired change in behavior and which will reinforce the change.

The long term impact of an education program about non-smoking should also be known by the educator. It is suggested that a follow up study of these students be made during their ninth grade year. Thus, it would be possible to make a comparison between this study and the results of the 1966 and 1968 surveys of ninth grade students included in the larger University of Illinois Study.

To avoid the apparent negative effect of the incoming trained or specialist teacher, the preparation of classroom teachers should be envisaged. Preparation in the use of group activity skills with the junior high school students is also indicated. The need for inservice training points to the potential value of a demonstration center that would help prepare teachers to make effective use of the methods and techniques that seem to produce desired behavior changes.

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APPENDIX

FIGURE 4. AND FIGURE 5.

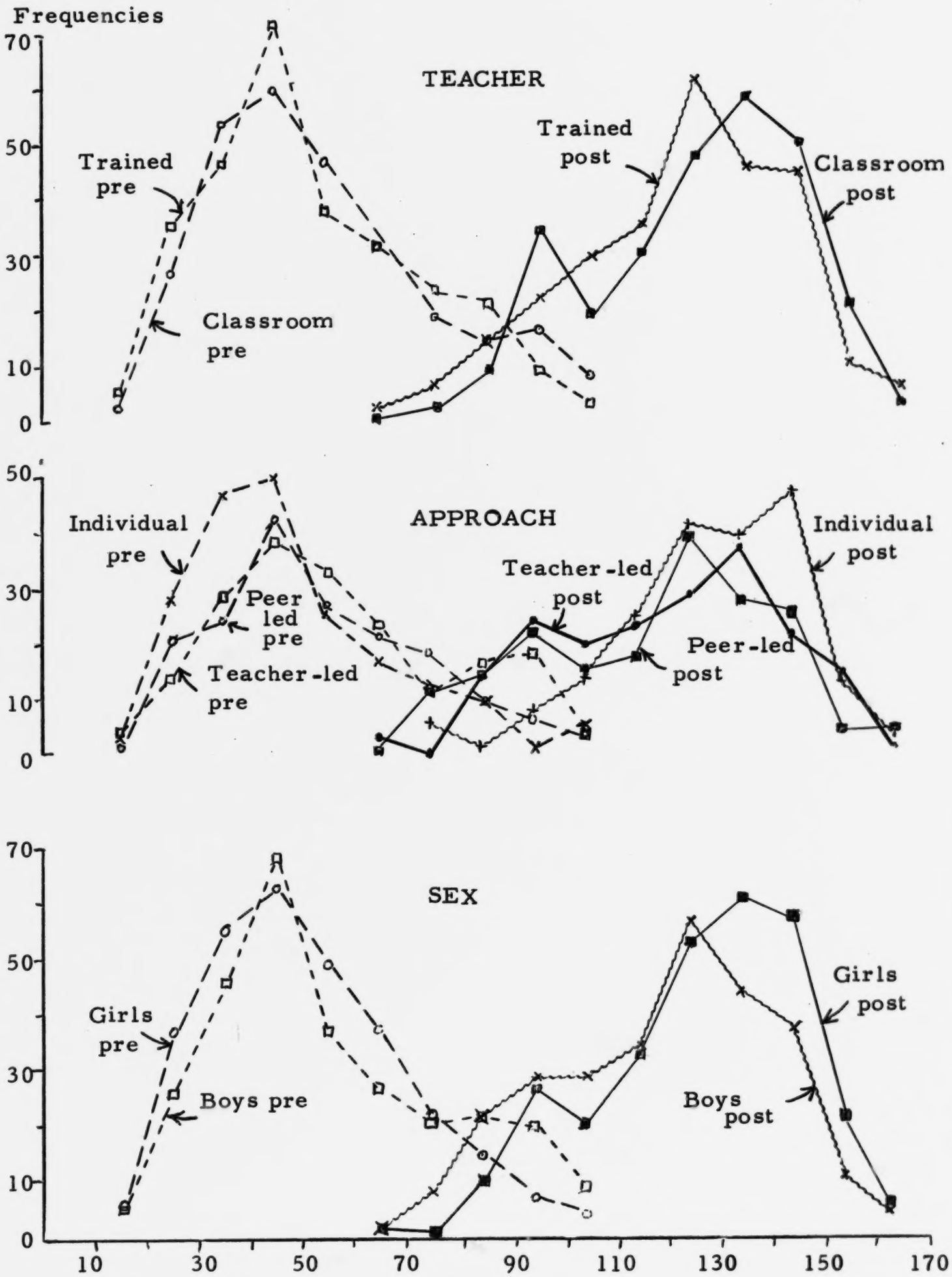

FIGURE 4 DISTRIBUTION OF THE PRE- AND POST-TREATMENT ATTITUDE-BELIEF SCORES

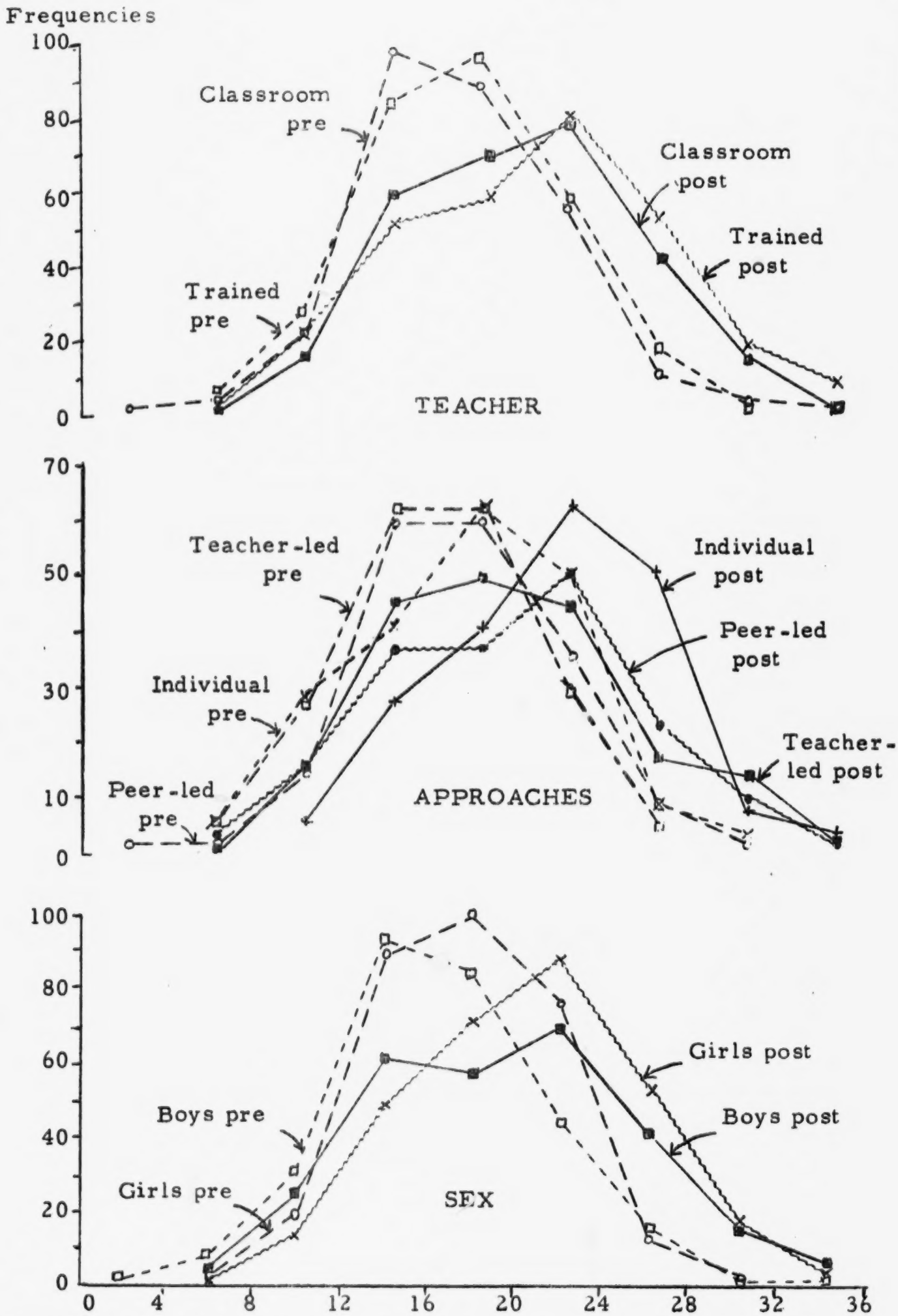

FIGURE 5 DISTRIBUTION OF THE PRE- AND POST-TREATMENT KNOWLEDGE TEST SCORES